

The impairment of Quivira National Wildlife Refuge

History and Current Status

Chris Beightel

Kanas Department of Agriculture Division of Water Resources



U.S. Fish & Wildlife Service

Quivira

National Wildlife Refuge | Kansas

7,000 acres of wetlands attract hundreds of thousands of ducks and geese annually. Its location in the middle of the Central Flyway places it in the primary pathway for many species of migrating shorebirds.

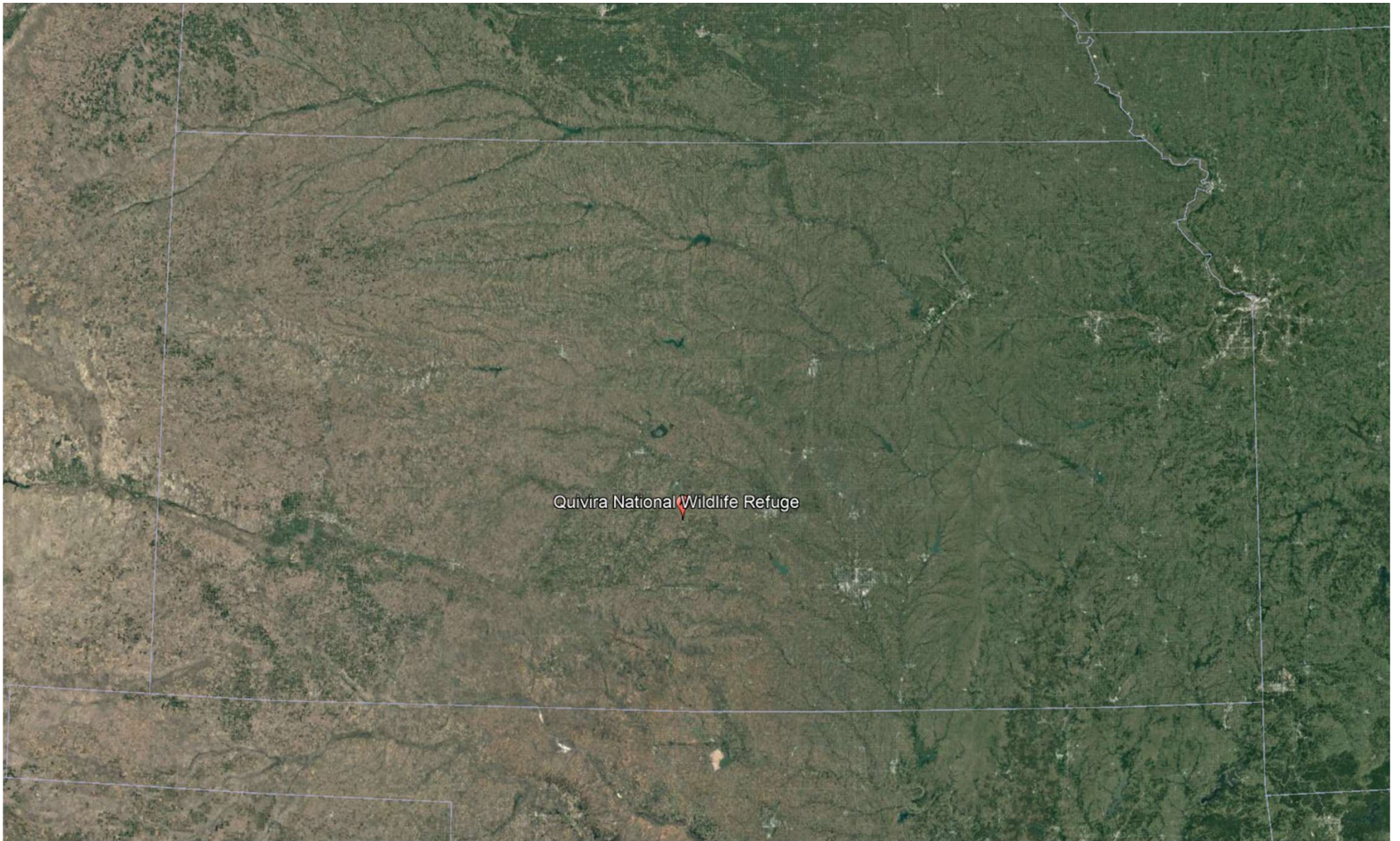
<https://www.fws.gov/refuge/Quivira/>

About the Refuge



Quivira National Wildlife Refuge was established in 1955 to provide and protect vital habitat for migratory waterfowl in the Central Flyway. It's 22,135 acres feature a unique combination of rare inland salt marsh and sand prairie. Many opportunities exist for the visitor to explore this oasis of the Great Plains.

Quivira National Wildlife Refuge



Great Bend

Quivira National Wildlife Refuge

QNW Refuge

Wichita

D viewer

Great Bend

Quivira National Wildlife Refuge
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Wichita

D viewer

Great Bend

Quivira National Wildlife Refuge

QNW Refuge

Wichita

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Elements of the Issue

Law & Hydrology

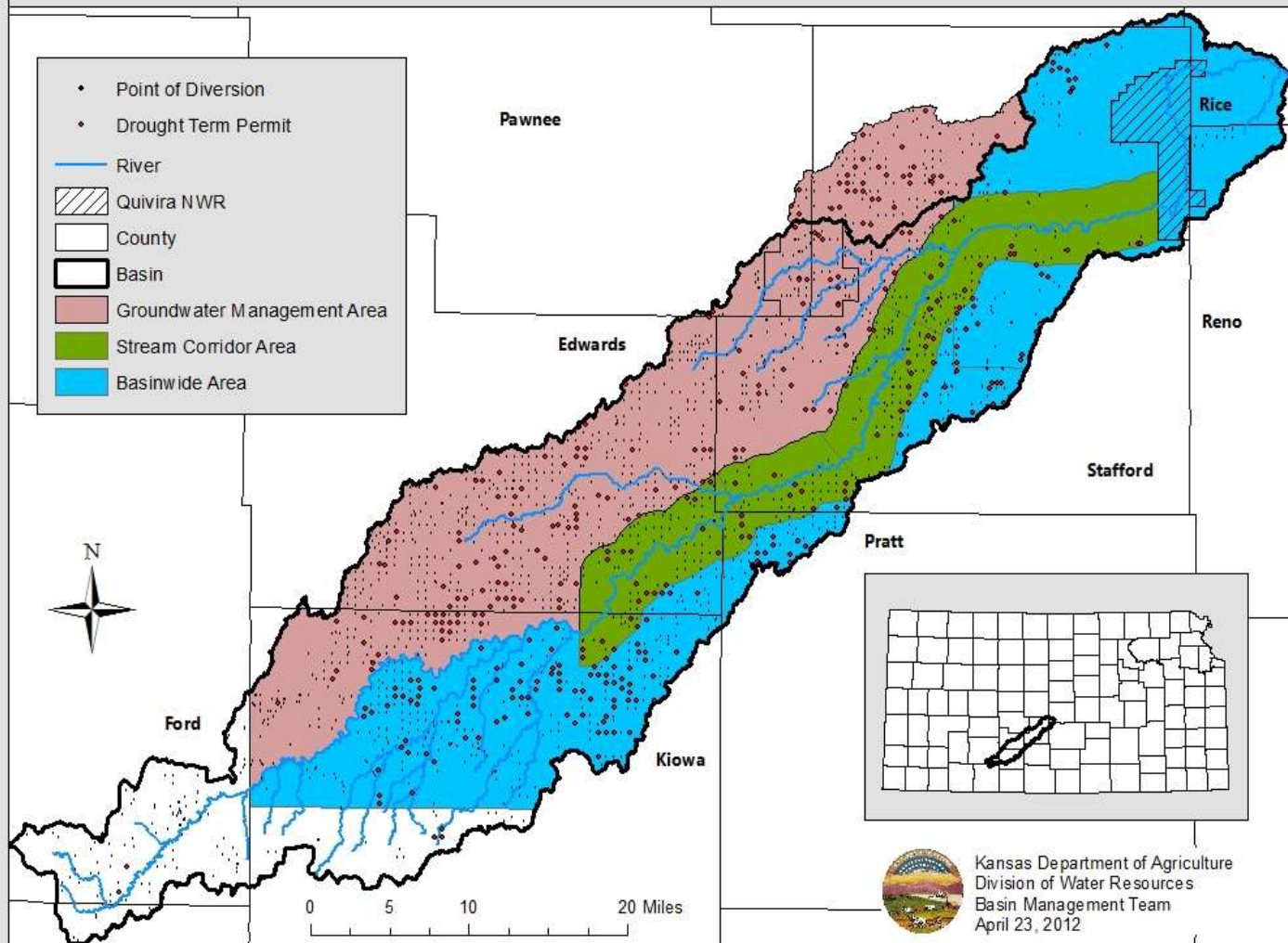
Water Rights 101 – Prior Appropriation Doctrine

- All waters of the state are regulated in one system of prior appropriation.
- First in time is first in right – When there is not enough water to satisfy all rights, senior water rights are entitled to their water before junior water rights.
- All uses are equal - type of use does not matter, only priority
- Kansas water rights are real property rights to the use of water

Water Rights 101 - Impairment

- K.S.A. 82a-706b: “It shall be unlawful for any person to prevent, by diversion or otherwise, any waters of this state from moving to a person having a prior right to use the same...”
- Impairment - a concept that describes the situation when operating a junior water right is preventing a senior water right from being fulfilled.
- Easy to see and administer with surface water.
- Difficult to deal with when groundwater is involved.

Points of Diversion and Groundwater Use Areas



Stream Depletion is the problem

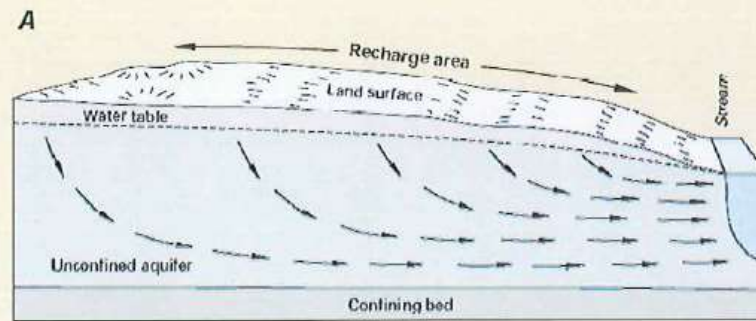
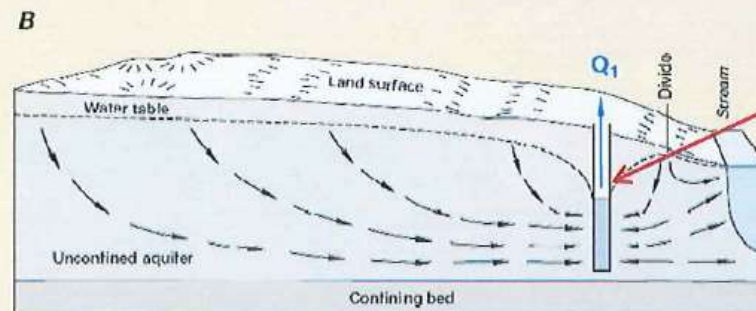
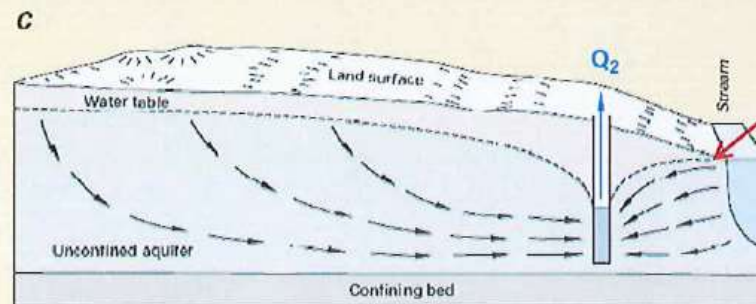


Figure C-1. In a schematic hydrologic setting where ground water discharges to a stream under natural conditions (A), placement of a well pumping at a rate (Q_1) near the stream will intercept part of the ground water that would have discharged to the stream (B). If the well is pumped at an even greater rate (Q_2), it can intercept additional water that would have discharged to the stream in the vicinity of the well and can draw water from the stream to the well (Q).



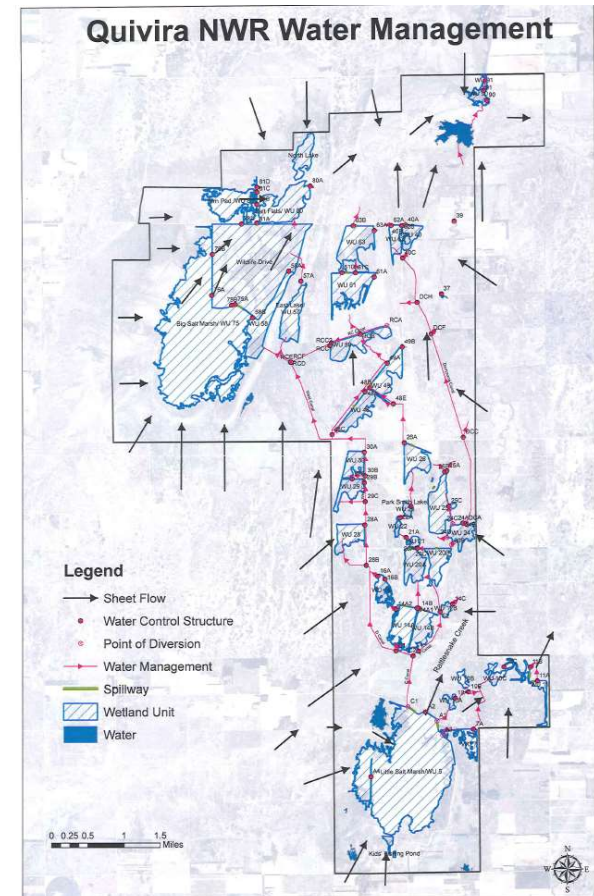
Cone of Depression



Intersection of stream by the cone of depression, resulting in diminishing streamflow.

Quivira National Wildlife Refuge

- U.S. Fish and Wildlife Service (Service) has senior Kansas surface water right at the bottom of the Rattlesnake Creek in Stafford County, to develop habitat and provide forage for the migratory birds.
- The Service has complained for decades that upstream, junior groundwater pumping is interfering with use of their water right.
- Rattlesnake Partnership, 1993-2012: Decades of planned voluntary efforts to resolve the Service's concerns have been unsuccessful.
- April 2013: the Service filed an impairment complaint with KDA-DWR, requesting our investigation and action.
- It is a duty of the chief engineer to protect senior water rights from impairment by junior water rights.



Rattlesnake Creek Partnership 1993-2012

- Formed to address Quivira's concerns over stream depletion
- Members:
 - Big Bend Groundwater District #5 (GMD #5)
 - Water Protection Association of Central Kansas (WaterPACK)
 - U.S. Fish & Wildlife Service (Quivira)
 - KS Dept of Agriculture Division of Water Resources (KDA-DWR)

Rattlesnake Creek Partnership 1993-2012

- Rattlesnake Creek Management Plan 2000:
 - Voluntary incentive-based actions
 - Water right buyouts
 - Augmentation
 - End gun removal
 - Water reduction goals
 - 12-year program with reviews every 4 years
 - Pledge to seek regulation if volunteer actions didn't work

GMD 5 Groundwater Model 2008-2010

- MODFLOW hydrologic model
 - Computer code to solve the groundwater flow equation
 - Incorporates the known: including
 - Recent Historical Pumping
 - Water levels
 - Streamflow
 - Elevations
 - Educated assumptions of the unknown, including:
 - Early Historical Pumping
 - Evapotranspiration
 - Aquifer properties

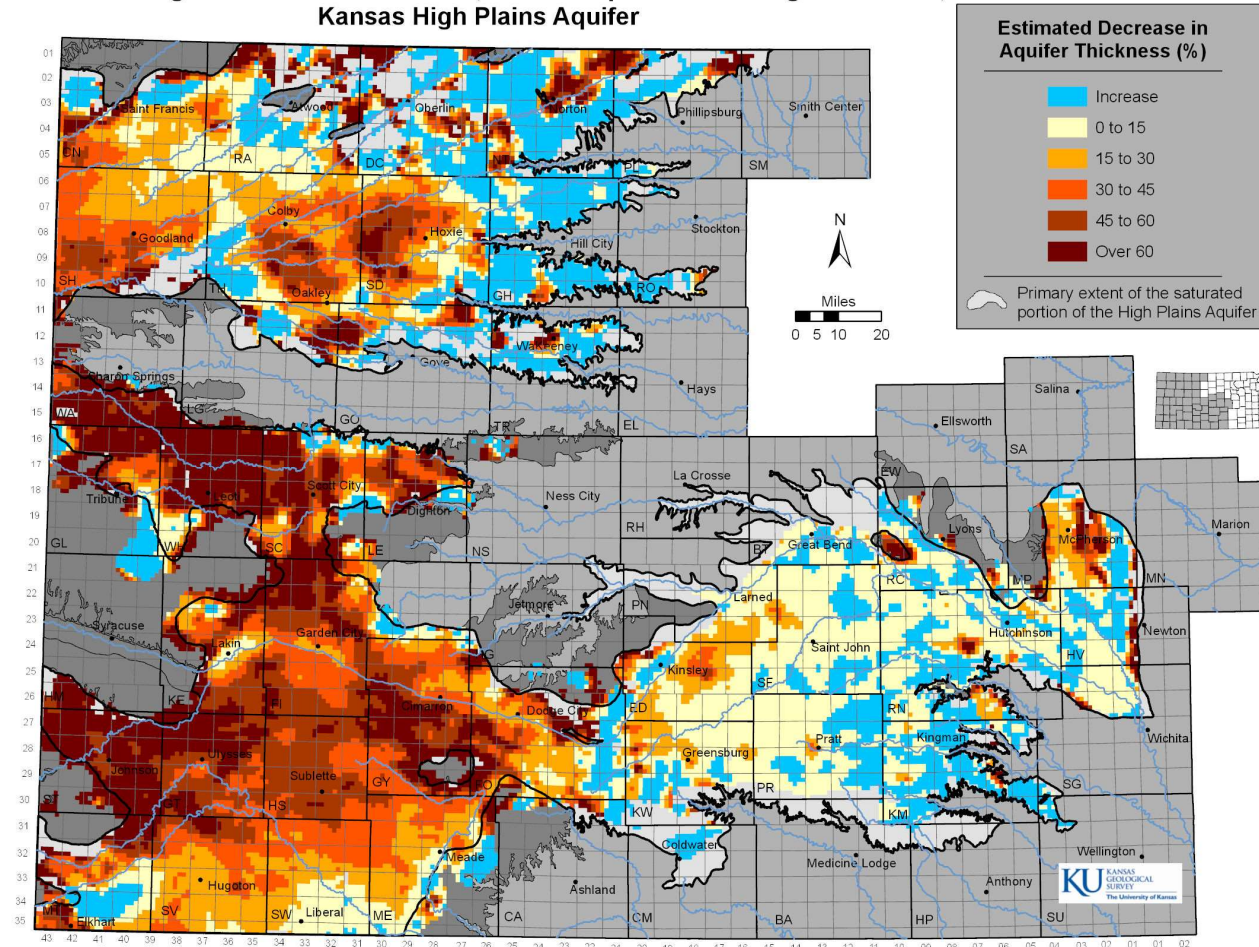
Rattlesnake Creek Partnership 1993-2012

- Rattlesnake Creek Management Plan 2000:
 - Voluntary incentive-based actions
 - Did not take place
 - Water reduction goals
 - Approximately 10% accomplished
 - 12-year program with reviews every 4 years
 - Each review showed little progress
 - Final review was rejected by GMD 5
 - Pledge to seek regulation if volunteer actions didn't work
 - Regulation was not sought

Groundwater levels are not the problem

- Groundwater levels within most of GMD 5 are relatively stable

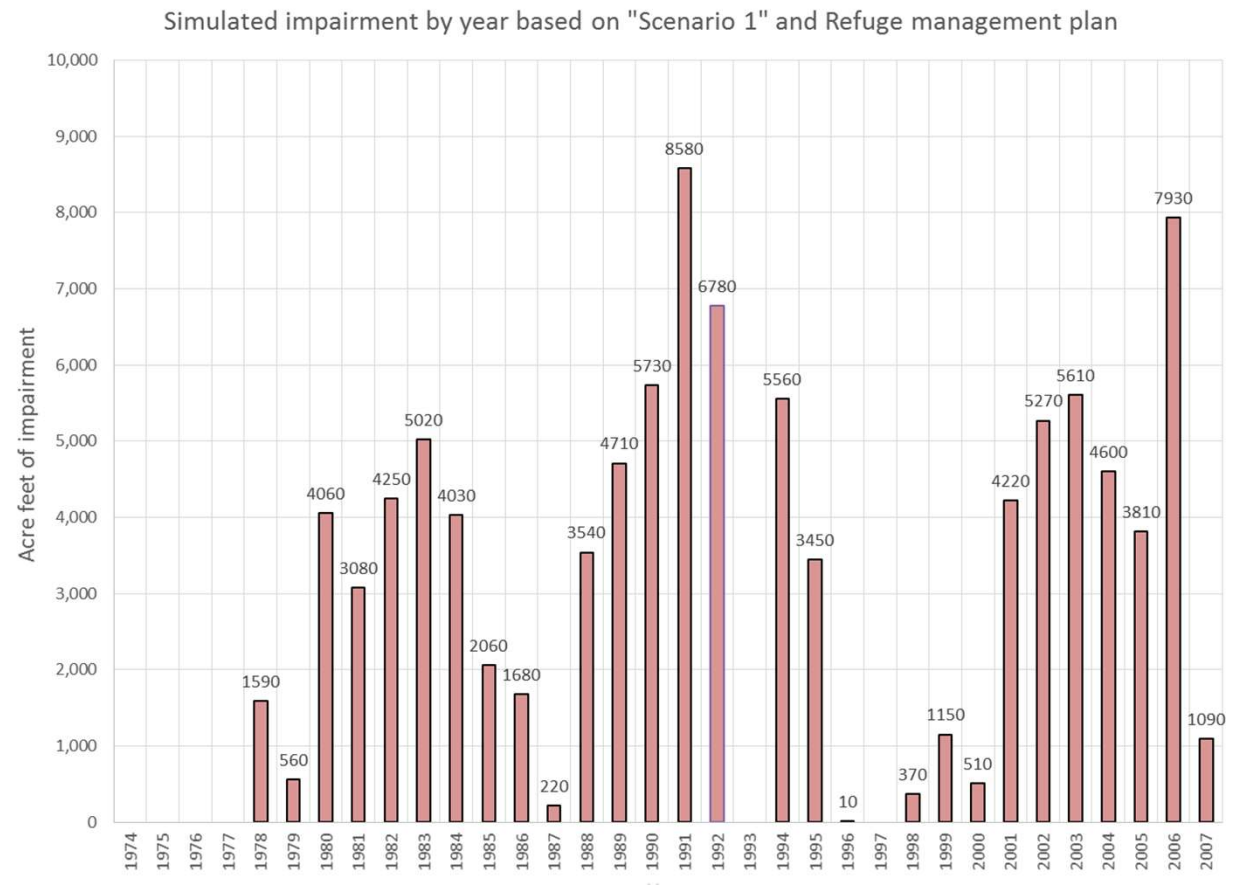
Percent Change in Saturated Thickness, Predevelopment to Average 2017-2019,
Kansas High Plains Aquifer



Impairment Investigation 2013-2015

- In April 2013 Quivira requested that its water right be protected
- KDA-DWR begins an impairment investigation
 - Using the GMD 5 hydrologic model:
 1. Simulate current conditions
 2. Simulate conditions without junior pumping
 3. The difference between 2. – 1. is how much more streamflow.
 4. Compare 3. to Quivira's seasonal need to quantify impairment
- Initial Report 2015
 - Law is changed to allow augmentation (K.S.A. 82a-706b)
- Final Report 2016

The significant reductions in streamflows from junior groundwater pumping has led to the regular and significant impairment of Quivira's water right.



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Negotiations and Proposals 2017-2019

- The chief engineer of KDA-DWR has a duty to protect senior water rights from impairment, however...
- KDA-DWR will not administer the junior water right unless the senior water right requests action, and
- If the senior water right asks the chief engineer to protect it from impairment, then the senior may not prescribe how the chief engineer acts to protect it.

Negotiations and Proposals 2017-2019

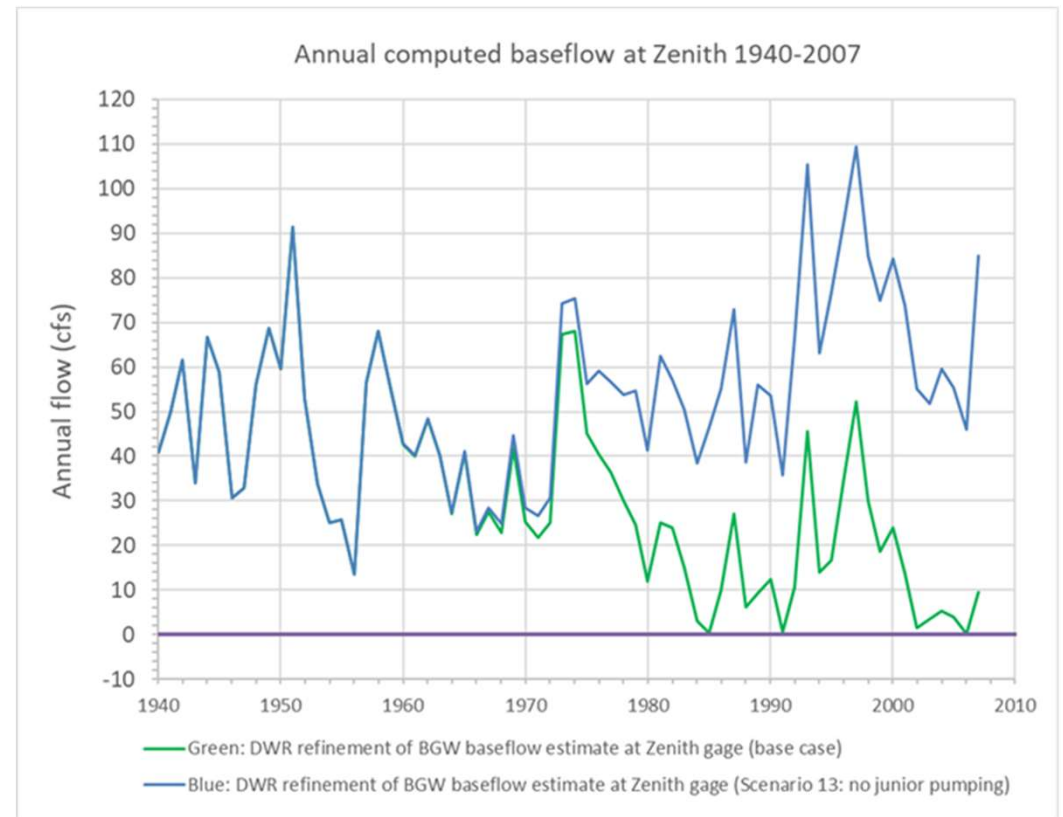
- GMD 5 offered to provide augmentation to Quivira in exchange for Quivira dropping its impairment complaint.
- Quivira declined the offer as insufficient citing forecasted declines in streamflow.
- Quivira then requested KDA-DWR administer water rights
- GMD 5 then turned to negotiating with KDA-DWR to resolve the impairment.
- KDA-DWR found that reducing recent historical use by 15% combined with 15 cfs of augmentation would remedy the impairment for a decade or more.

Negotiations and Proposals 2017-2019

- GMD 5's consultants found that augmentation alone would resolve the impairment and that pumping reductions were unneeded.
- KDA-DWR was not persuaded.

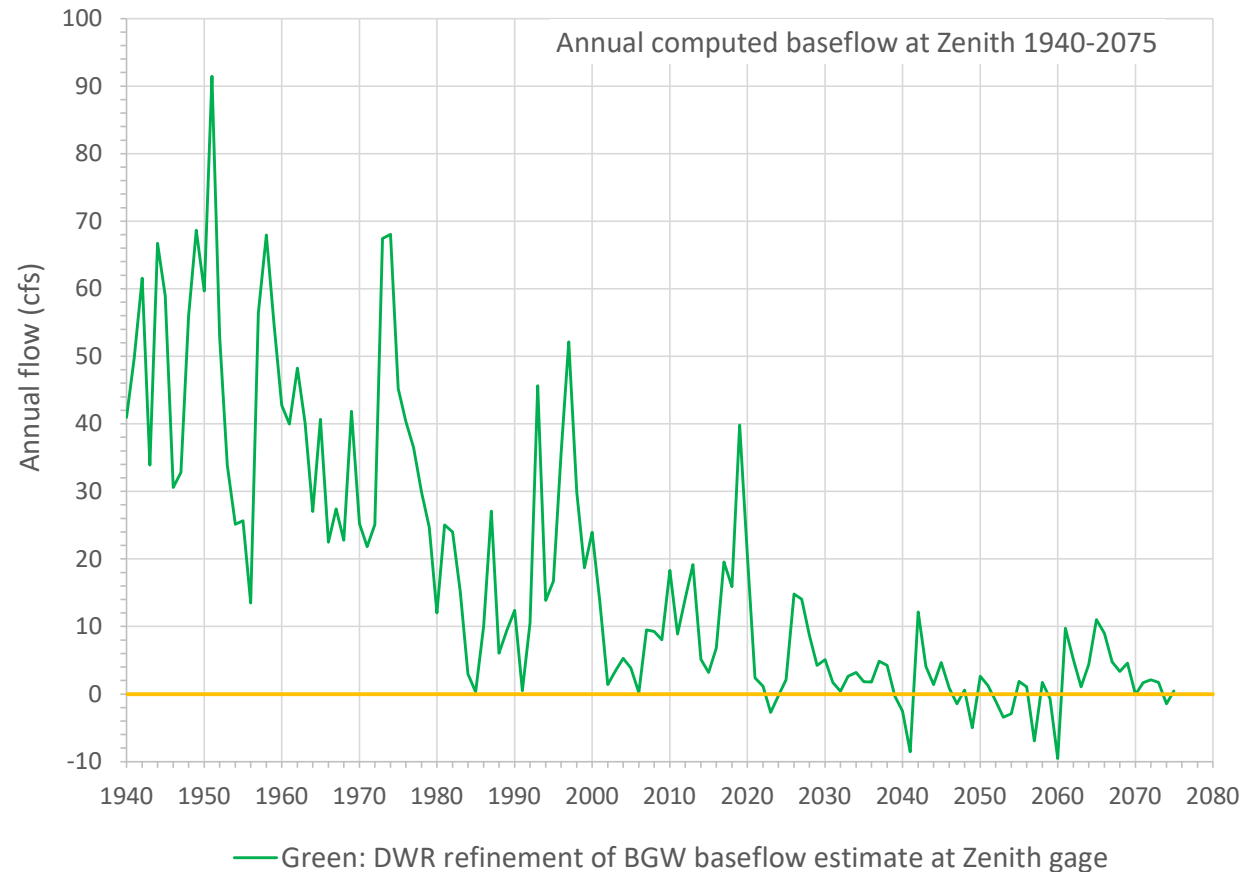
The problem: junior groundwater pumping's impact on streamflow

- GMD 5's groundwater model demonstrates, starting in the 1970's, a dramatic and growing reduction in streamflow due to groundwater pumping.
- Here are GMD 5 model's estimates of groundwater outflows into the stream (baseflow) with and without junior groundwater pumping.

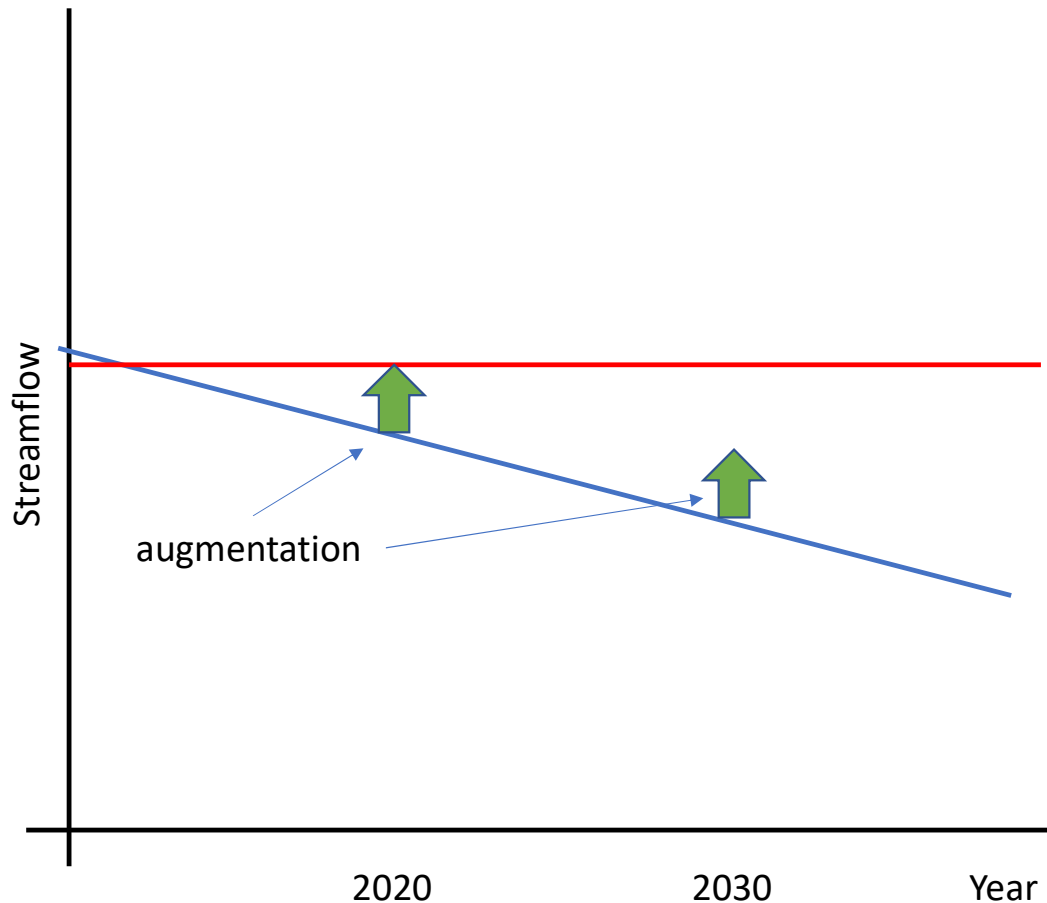


The GMD 5 Model demonstrates that baseflow will continue to decline in the future

At the current level of pumping, baseflow will continue to decline even more in the future, such that most future years in will have little to no baseflow.



Pumping reductions are necessary to start to stabilize streamflow

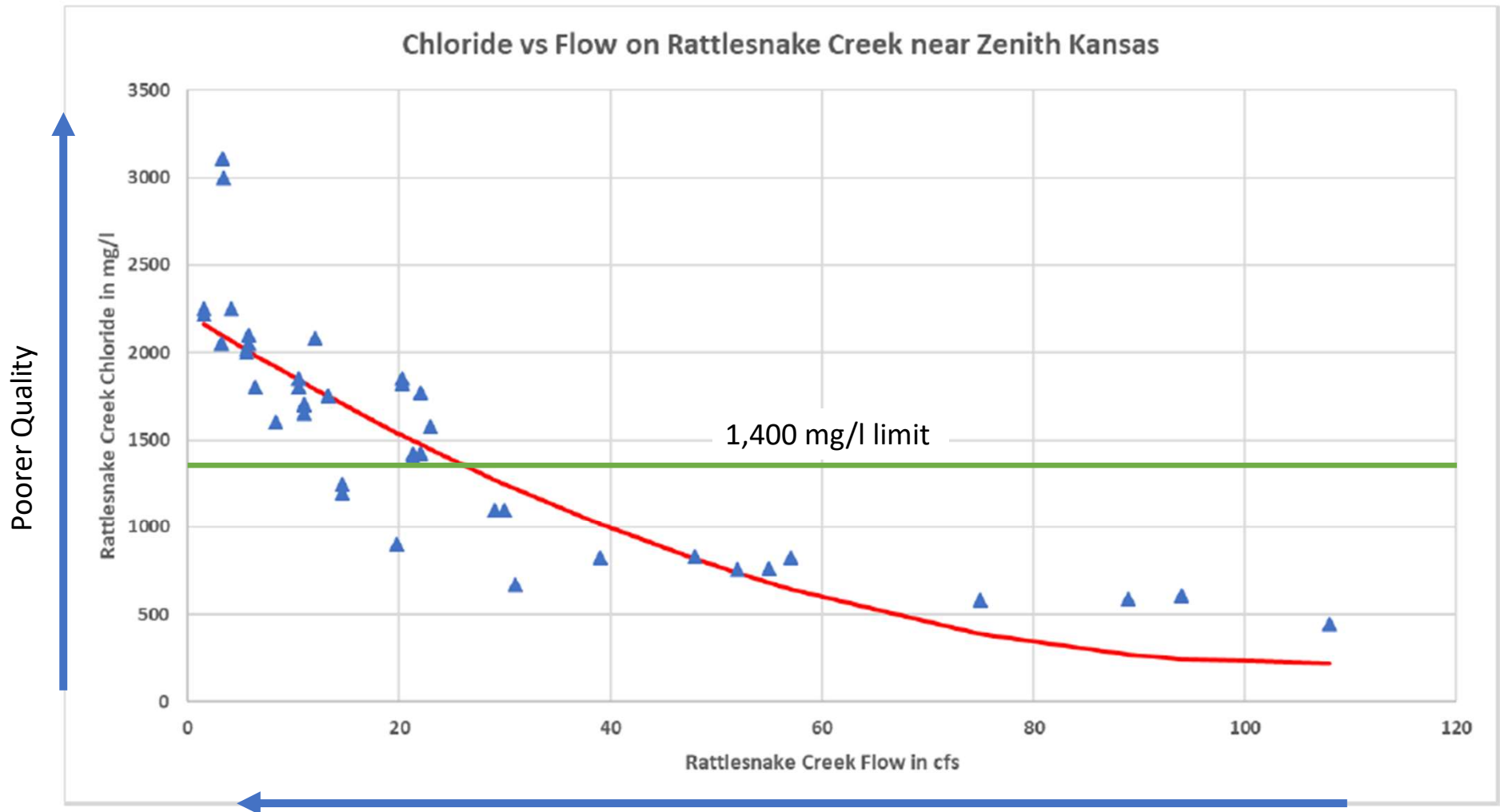


If streamflow continues to go away, then augmentation that was enough based on our impairment analyses (through 2007) won't be enough in later years.

Pumping more augmentation water may not be possible because:

- The water may not be available
- The water quality may be too poor
- Or both

As streamflows declines, the stream water quality degrades



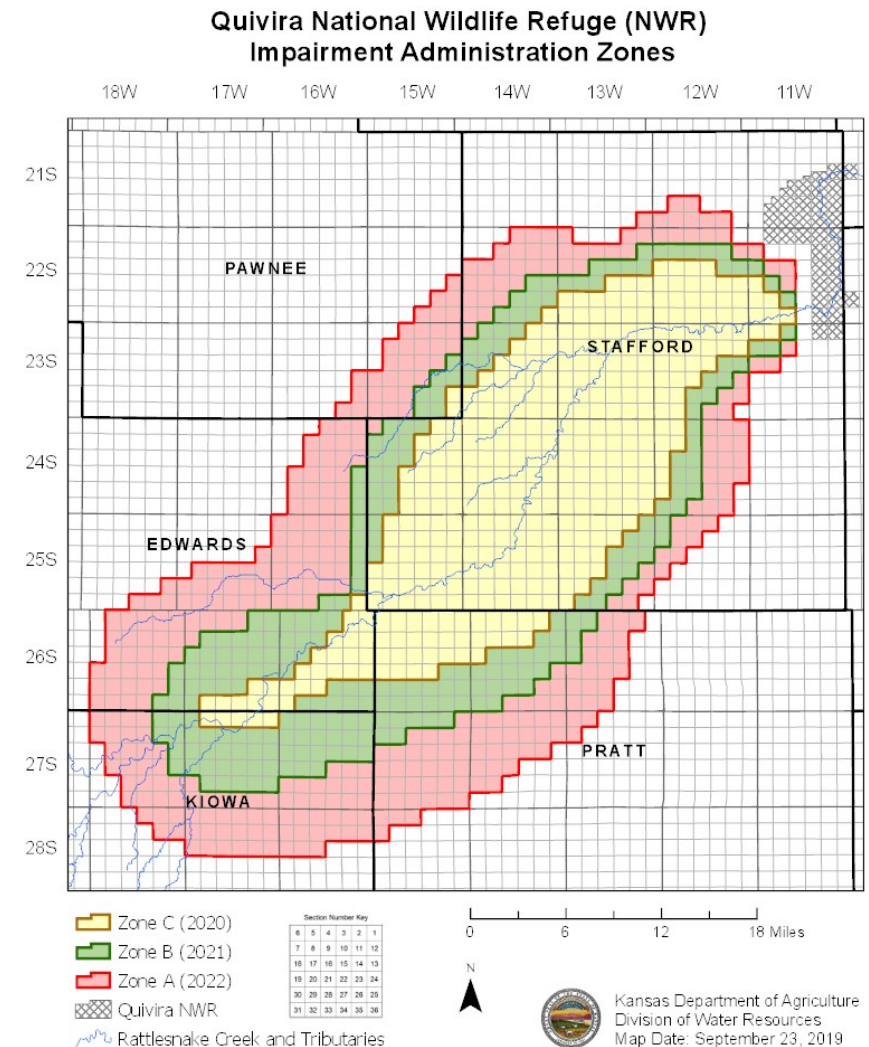
Negotiations 2019 - Present

- In 2019 Quivira plans to request to have its water right protected in 2020.
- With no imminent solution in sight, KDA-DWR prepared to administer water rights.
 - It had been 3 years since the final impairment report
 - The Service requested KDA-DWR to protect its water right in both 2018 and 2019, but citing progress with GMD 5, KDA-DWR did not act.
 - Progress towards a locally developed solution halted.
 - Augmentation is not available and is not in sight.
 - Further delay in action to address the impairment is inconsistent with the chief engineer's responsibilities under state law, and
 - Further delay exposes the basin to much more significant and inflexible reductions being ordered by a Court.

Phase-in of orders

To satisfy the legal duties of the Chief Engineer, while providing additional time for the development of a local solution, administration will be phased in over 3 years:

- Orders will be issued to those in Zone C (yellow) in 2020.
 - Zone C represents approx. 1/3 of the water rights in the effected area, but over 52% of the stream impacts.
- Orders will be issued to those in Zone B (green) in 2021 and Zone A (red) in 2022.
 - While water rights in Zones A and B have a significantly lower part of their pumping that reduces streamflows at Zenith, it still amounts to nearly ½ of the total stream impacts.



United States Senator *for* Kansas 

JERRY MORAN

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Sen. Moran Discusses Quivira National Wildlife Refuge Water Rights with FWS Nominee Aurelia Skipwith

"I am pleased that Ms. Skipwith committed to working with local stakeholders to find a voluntary solution to satisfy the Quivira water impairment. . ."

Oct 21 2019

WASHINGTON – U.S. Senator Jerry Moran (R-Kan.) met with Aurelia Skipwith, the nominee to be the Director of the U.S. Fish and Wildlife Service (FWS) and the current Deputy Assistant Secretary for Fish, Wildlife and Parks at the Department of the Interior. During the meeting, Sen. Moran raised concerns regarding the water rights dispute surrounding the Quivira National Wildlife Refuge (NWR).



Negotiations 2019 - Present

- December 2019 GMD 5 and Quivira begin frequent meetings
- July 2020 GMD 5 and Quivira sign memorandum of agreement
 - GMD 5 agreed to:
 - Timeline for construction of augmentation project
 - Additional voluntary actions to reduce water use
 - Quivira agreed to:
 - Make better use of the storage in Little Salt Marsh
 - Not request that its water right be protected in 2021

What does the future hold?

- Risks to consider
 - For GMD 5:
 - ~\$12 Million+ staffing to construct, maintain and operate the project
 - Unknown water quality issues
 - Change in USF&W Service leadership
 - Outside interests/litigation
 - For Quivira/USF&W Service
 - Continued water shortages caused by impairment threaten refuge mission
 - Outside environmental interests/litigation
- Hopefully a happy ending

Thank You

Chris Beightel

Chris.Beightel@ks.gov

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